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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/535,836	03/28/2000	Hisashi Ohtani	SEL 173	5046

7590 09/26/2003

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EXAMINER

VU, HUNG K

ART UNIT PAPER NUMBER

2811

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/535,836

Applicant(s)

OHTANI ET AL.

Examiner

Hung K. Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 and 25-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 19-24 and 28-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/23/03 has been entered. An action on the RCE follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28-31 and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (PN 5,777,701, of record) in view of Tabara (PN 5,767,015).

With regard to claims 28 and 40, Zhang discloses, as shown in Figure 1, a semiconductor device comprising,

a thin film transistor formed over a substrate (101), the thin film transistor having a semiconductor layer (104,106) and a gate layer electrode (110) adjacent to the semiconductor layer with a gate insulating film (109) interposed there between;

a first insulating film (112) formed over the thin film transistor;
a second conductive layer (115) formed on the first insulating layer;
a second insulating film (117) formed on the second conductive layer;
a pixel electrode (118) formed on the second insulating film, the pixel electrode being connected to the second conductive layer at the bottom of a contact hole provided in the second insulating film;

wherein the second wiring layer is directly connected to the semiconductor layer through a contact hole provided in the first insulating film.

Zhang does not disclose a first conductive layer with a contact hole between the first insulating layer and the second conductive layer. However, Tabara discloses an aluminum layer (16) with a contact hole between a first insulating layer (14) and a second metallic layer (18A,20A). Note Col. 3, line 56, Col. 4, line 58 – Col. 5, line 10, and Figure 8A of Tabara. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a first conductive layer with a contact hole between the first insulating layer and the second conductive layer of Zhang, such as taught by Tabara in order to have the contact hole with higher aspect ratio so that the number of processes can be reduced and the reliability of the interconnection can be improved.

With regard to claims 29 and 41, Zhang and Tabara disclose the first metallic layer is selected from the group consisting of aluminum and a material predominantly composed of aluminum [Col. 3, line 56].

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With regard to claims 30 and 42, Zhang and Tabara disclose the second metallic layer is selected from the group consisting of titanium and a material predominantly composed of titanium [Col. 4, line 58 – Col. 5, line 10].

With regard to claims 31 and 43, Zhang and Tabara disclose the organic material is selected from the group consisting of polyimide and acrylics [Col. 4, lines 55-58].

3. Claims 1-12, 19-24, 32-39 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (PN 5,777,701, of record) in view of Tabara (PN 5,767,015) and further in view of Fukunaga (PN 6,115,094).

With regard to claims 1, 7, 19 and 34, Zhang and Tabara disclose the invention substantially as claimed including the semiconductor device as recited in the rejection above. Zhang and Tabara further disclose the first insulating layer is silicon oxide. Zhang and Tabara do not disclose the first insulating layer comprising an organic material. However, Fukunaga discloses a first insulating layer comprising material selected from a group consisting of a silicon oxide and an organic material. Note Col. 4, lines 55-56 and Figures 2D, 4C and 5 of Fukunaga. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute silicon oxide of Zhang and Tabara with organic material, such as taught by Fukunaga because silicon oxide and organic material are commonly used as the interlayer insulating layer and they are interchangeable.

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With regard to claims 2, 8, 20, and 35, Zhang, Tabara and Fukunaga disclose the first metallic layer is selected from the group consisting of aluminum and a material predominantly composed of aluminum [Col. 3, line 56].

With regard to claims 3, 9, 21, and 36, Zhang, Tabara and Fukunaga disclose the second metallic layer is selected from the group consisting of titanium and a material predominantly composed of titanium [Col. 4, line 58 – Col. 5, line 10].

With regard to claims 4, 10, 22 and 37, Zhang, Tabara and Fukunaga disclose the organic material is selected from the group consisting of polyimide and acrylics [Col. 4, lines 55-58].

With regard to claims 5, 11, 23, 32, 38, and 44, Zhang, Tabara and Fukunaga disclose wherein the semiconductor device is selected from the group consisting of an active matrix liquid-crystal display device, an active matrix EL display device, and an active matrix EC display device.

With regard to claims 6, 12, 24, 33, 39, and 45, Zhang, Tabara and Fukunaga disclose the semiconductor device is selected from the group consisting of a video camera, a digital camera, a projector, a goggle-type display device, a car navigation device, a personal computer, and a portable information terminal.

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Response to Arguments

4. Applicant's arguments with respect to claims 1, 7, 19, 28, 34 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

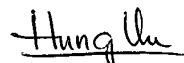
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

September 5, 2003



Hung Vu

Patent Examiner